

radius



SERIES K  
Scotch Yoke  
Actuator Series



**SIL3**  
Safety Integrity Level

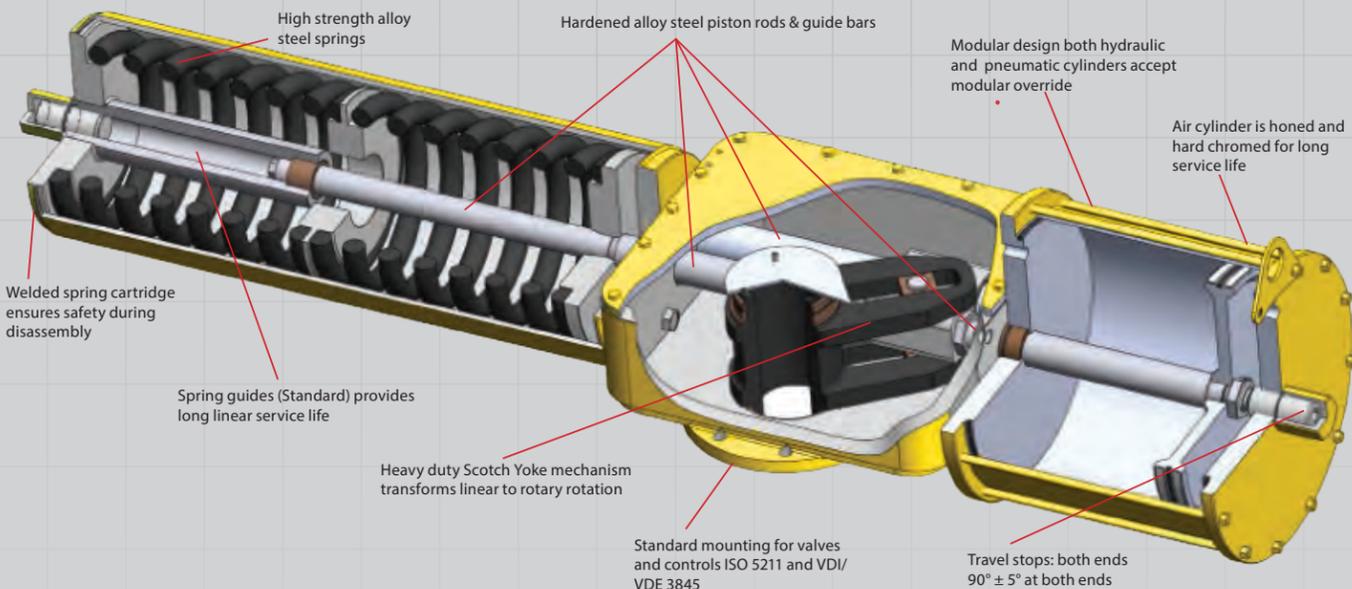




The Radius KSY and KSYM Pneumatic Scotch Yoke actuators and KSYH and KSYHM Hydraulic Scotch Yoke actuators are specifically designed for use with quarter-turn valves. The large output torque range offered by Radius ensures that our actuators match the operational characteristics of plug, ball or butterfly valves; or any device requiring precise and reliable 90° rotary motion.

### FEATURES AND BENEFITS

- Carbon Steel Scotch Yoke mechanism available in either canted or symmetric form.
- Modular construction allows the cylinder and the spring cartridge to be assembled to either side of the central body.
- Totally enclosed weatherproof central body. IP-65/IP-66 certified.
- The air cylinder is honed and hard chromed as standard to improve corrosion resistance and reliability.
- An internal chrome guide bar ensures proper support of the piston rod.
- Bronze bearings and sliding blocks are provided for smooth operation and extended service life.
- For the spring return version the spring is supplied in a welded spring cartridge to ensure safety when disassembling. The spring cartridge can only be removed when the spring is released.
- Cylinders and spring cartridges are fitted with mechanical end stops for both open and close +/- 5°.
- Multiple combination of spring cartridges and air cylinders allow a wide range of torques for one model.
- All components have high resistance to corrosion.
- Linking surfaces according to ISO 5211 mounting and VDI/VDE 3845.
- All springs are preloaded for safety.
- All models are easily convertible from spring return to double acting or vice versa.
- The yoke mechanism is designed to deliver more torque when the valve is breaking and re-seating.



Note: Radius reserves the right to make technical and/or dimensional changes without prior notice

### TECHNICAL SPECIFICATIONS

#### Pneumatic Scotch Yoke (KSY / KSYM)

- Certificates and Approvals ISO 9001:2008, IEC 61508:2010 (SIL3), LOM 10ATEX6092 X and European Pressure Equipment Directive 97/23/CE
- Temperature range -4° to 140°F
- Lubrication Free for its normal life
- Working Pressure Double Acting: From 29 to 145 PSI  
Spring Return: From 44 to 131 PSI
- Rotation Anti-clockwise to open
- Movement 90° ± 5° (at each end)
- Media Air or non corrosive gas

#### Hydraulic Scotch Yoke (KSYH / KSYHM)

- Certificates and Approvals ISO 9001:2008, LOM 10ATEX6092 X and European Pressure Equipment Directive 97/23/CE
- Temperature range -4° to 140°F
- Lubrication Free for its normal life
- Working Pressure Double Acting: From 750 to 3000 PSI  
Spring Return: From 1000 to 3000 PSI
- Rotation Anti-clockwise to open
- Movement 90° ± 5° (at each end)
- Media Standard hydraulic fluid

### OPTIONS

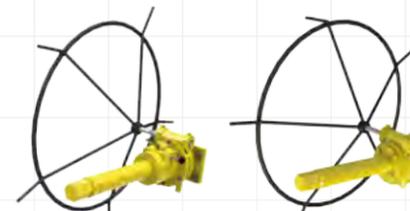
- Double Acting and Spring Return actuators available.
- Special O-Rings for low temperature and high temperature applications available upon request.
- Special coating for extreme corrosive environments available upon request.
- Mounting brackets to valves available upon request.
- Low temperature versions up to -58°F
- High temperature versions up to 356°F.
- Complete package with control panels, solenoid valves, air tanks and accessories are available
- Fail open and canted scotch yoke models

### MANUAL OVERRIDES

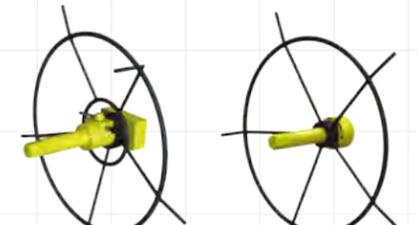
- A variety of manual overrides are available and are easily adapted to all actuators.
- Completely sealed for use in corrosive environments.
- Lubricated for normal working life.



Enclosed Gear Overrides  
Models KSY / KSYM 100-400



Worm Gear Manual Overrides  
Models KSY / KSYM 1600



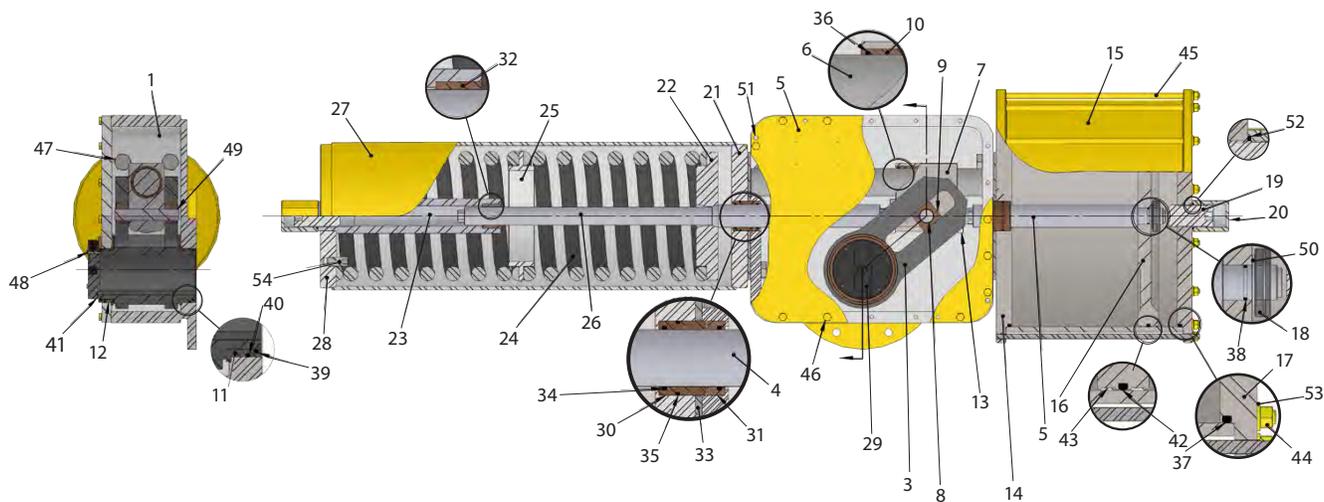
Jack Screw Manual Overrides  
Models KSY / KSYM 900



Hydraulic Pump Overrides  
Models KSYH / KSYHM 3500-5000

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# MATERIAL LIST



## Typical Pneumatic 400-900-1600-3500-5000 version

Item	Description	Quantity	Material	Surface Finish
1	Body	1	Alloy Steel	
2	Cover	1	Alloy Steel	
3	Yoke	1	Alloy Steel	Tenifer
4	Spring Cylinder Bar	1	Alloy Steel	Chromed
5	Piston Rod	1	Alloy Steel	Chromed
6	Guide Bar	1	Alloy Steel	Chromed
7	Slide Block	1	Alloy Steel	
8	Slide Pin	1	Alloy Steel	Chromed
9	Slide	2	Bronze	
10	Slide Block Tip	1	Bronze	
11	Body Tip	1	Bronze	
12	Cover Tip	1	Bronze	
13	Split Washer	4	Alloy Steel	
14	Cylinder Front Cover	1	Alloy Steel	
15	Air Cylinder	1	ST-52	Chromed
16	Air Piston	1	Alloy Steel	
17	Cylinder End Cover	1	Alloy Steel	
18	Lock Nut	1	Alloy Steel	
19	Travel Stopper Bolt	2	Alloy Steel	
20	Travel Stopper Nut	2	Alloy Steel	
21	Spring Front Cover	1	Alloy Steel	
22	Spring Retainer	1	Alloy Steel	
23	Spring Cylinder Guide	1	ST-52	
24	Spring	2	Alloy Steel	Polyurethane
25	Spring Separator Disc	1	Alloy Steel	
26	Spring Guide Bar	1	Alloy Steel	Chromed
27	Spring Cylinder	1	ST-52	

Item	Description	Quantity	Material	Surface Finish
28	Spring End Cover	1	Alloy Steel	
29	Indicator	1	Alloy Steel	Polyurethane
30	Body Rod Tip I	2	Bronze	
31	Body Rod Tip II	2	Bronze	
32	Spring Guide Tip	1	Bronze	
33	Plate	2	Alloy Steel	
34	Body Rod Tip O-Ring	4	NBR	
35	Body Rod Tip Ext. O-Ring	2	NBR	
36	Slide Block Tip O-Ring	2	NBR	
37	Air Cylinder Tip O-Ring	2	NBR	
38	Piston O-Ring I	1	NBR	
39	Cover & Body Tip O-Ring I	2	NBR	
40	Cover & Body Tip O-Ring II	2	NBR	
41	Indicator Seal	1	NBR	
42	Piston O-Ring II	1	NBR	
43	Teflon Seal	2	Teflon	
44	Hexagon Nut	12	-	
45	Tie Bolt	12	Alloy Steel	
46	Cover Hexagonal Bolt	16	-	
47	Body Hexagonal Bolt	8	-	
48	Indicator Bolt	4	Stainless Steel	
49	Retainer Ring	2	-	
50	Washer	1	-	
51	Pin	2	-	
52	Travel Stop O-Ring	2	NBR	
53	Tie Bolt Washer	12	Alloy Steel	
54	Center Spring Bolt	6	Alloy Steel	

Radius LLC is ISO 9001:2008 certified.



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